EXERGEN
CORPORATION

Calibration Verification Kit (CVK)

-for all Exergen TAT-5000 and
TAT-5000S medical thermometers

Calibration Verification Kit
P/N 129075 – Arterial
P/N 129076 – Oral

What is the purpose of a calibration verification kit?

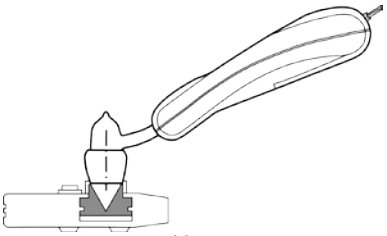
It allows the calibration of any Exergen thermometer to be verified in the hospital, on nursing floors, or in the field, conveniently, quickly, and accurately.

Why is a CVK necessary?

Calibration verification is a commonly required part of routine quality assurance programs, and also is used if a question is raised about the accuracy of a particular thermometer. Actual recalibration of an Exergen thermometer is never required unless it has been physically damaged or experiences component failure, in which case the calibration verification test identifies the problem device, which then is returned to the factory for repair.

What is in the CVK?

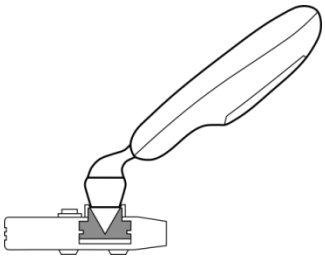
A special TAT-5000 Certified Master (CM) reference thermometer of the same calibration type (Arterial or Oral) in use by the institution, a portable hand-held reference blackbody, an AC plug-in adapter for long term use, a 9-volt battery for portable use, and a rugged storage case.



In Use with TAT-5000

Who uses the CVK?

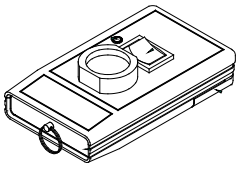
The main users are biomedical/clinical engineering, blood donor and pheresis units (in the United States, blood donor and pheresis units are required by the American Association of Blood Banks to verify thermometers on a daily basis), and many nursing units where accurate temperature is critical such as hematology/oncology, and bone marrow and organ transplant units.



In Use with TAT-5000S

How is the CVK ordered?

The order must include the serial number of any one of the TAT-5000 or TAT-5000S thermometers that will be verified. This identification assures an exact calibration match to the CM reference thermometer.



Handheld Blackbody

Does the master reference thermometer need calibration?

The calibration of the CM thermometer should be checked and factory re-certified yearly. This is indicated by the due date on the calibration sticker affixed to the CM thermometer. On or before the due date the CM thermometer should be returned to Exergen for re-certification. The Exergen part number for re-certification is 139000, the cost is $75.

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Exergen Temporal Artery Thermometry

Calibration Verification Procedure

Suitable for All TAT-5000 and TAT-5000S Models

All Exergen infrared thermometers are designed to permanently maintain their accuracy, and feature a patented hermetically-sealed optical system which protects the internal optical system against contamination by dirt, dust, moisture, and solvents.

Most reported problems are the result of a dirty lens. As infrared thermometers take an optical measurement, a dirty lens can result in a low reading. Cleaning the lens will result in an immediate return to normal calibration.

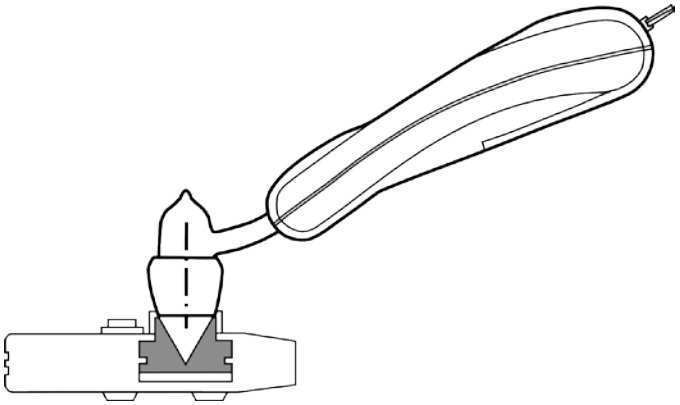


Figure 1. Portable black body is used to verify the calibration of any TAT-5000 or TAT-5000S vs. a Certified Master, by comparison of readings.

Normally, recalibration is never required unless the thermometer has been physically damaged or experiences component failure. Recalibration is done only at the factory, but calibration verification can be conveniently accomplished with a Calibration Verification Kit in biomedical engineering, and other areas requiring frequent accuracy verification of patient thermometry such as blood donor or pheresis units.

Calibration Verification Kit (CVK)

The CVK includes a portable blackbody heat generator providing a stable source of heat in a small cavity. This is used as a target reference to verify the calibration of any of Exergen's medical instruments against an Exergen Certified Master (CM) reference instrument, also included in the kit. The CM instrument must be of the same type calibration as the units to be tested (S/N label letters A or O need to match). If this is not the case, please contact Exergen.

The verifier operates with either a 9-volt power supply plugged directly into a 90 to 264 VAC electrical outlet allowing its extended use, or for portable use on nursing floors, it can be completely powered by a 9-volt battery.

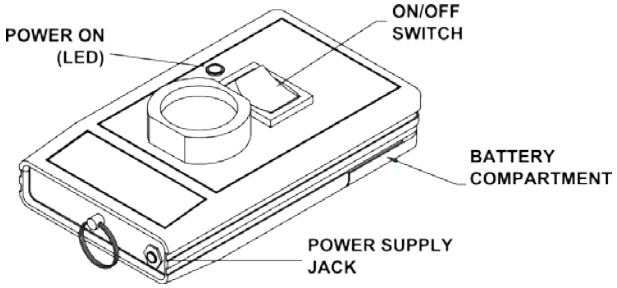


Figure 2. Model PBB-1 Portable Blackbody Calibration Verifier

Calibration Verification:

1. **Getting started**. Turn on the verifier device, making sure the LED is illuminated. If not, check the battery to assure it is installed correctly. If using the power supply, simply insert the plug into the power supply jack, and plug the power supply into any 90 to 264 VAC electrical outlet.

   Check the serial numbers of both the Certified Master and the thermometer to be tested. Both should start with the letter 'A' (Arterial) or both with the letter 'O' (Oral) indicating that the calibration types are correct. If the serial numbers do not have matching letter prefix type codes, please contact Exergen.

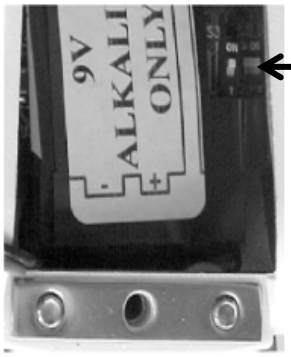
2. **Allow device to stabilize.** Once turned on, allow approximately 5 minutes for warm-up and stabilization time.

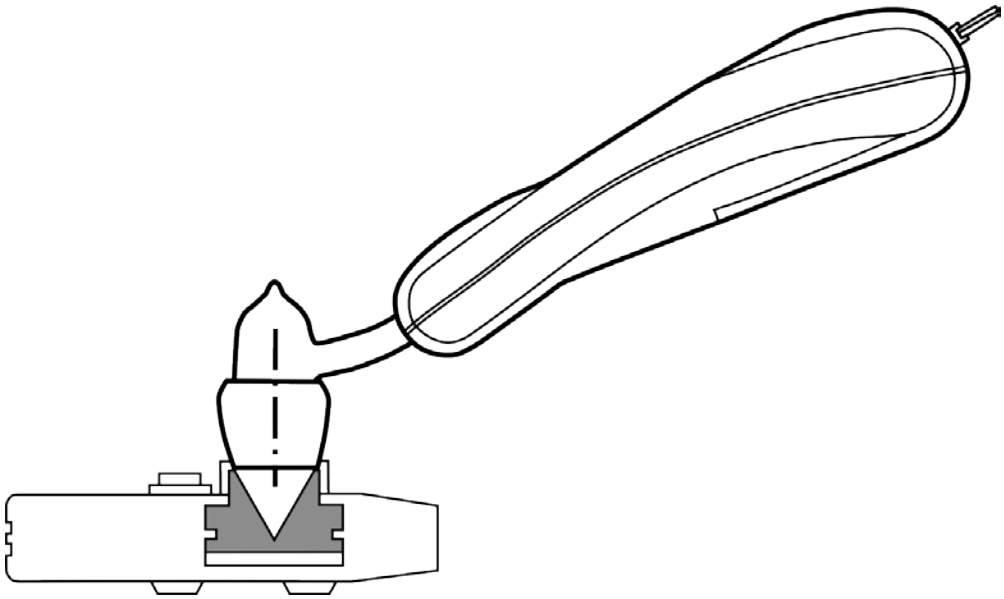
3. **Allow both the Certified Master and instruments to be tested to acclimate to the same ambient temperature.** Allow to equilibrate to room temperature for at least 10 minutes.

4. **Assure lens is clean.** Make sure the lens at the tip of the probe of all instruments, including the Master Reference, is clean. To clean, use an alcohol dampened cotton tipped applicator (Q-tip) which is required to get directly on the lens.

5. **Using disposable covers or sheaths.** Do not use disposable covers or sheaths when checking thermometer calibration with the CVK.

6. **Conversion of Master thermometer from F to C:** The CM thermometer can be converted from Fahrenheit to Celsius and back by means of a switch, which is accessable in the battery compartment.





7. **Compare CM Reference Thermometer readings to test thermometer.** Refer to instruction manual for particular model being verified. Alternately insert the CM thermometer and the thermometer being verified into the portable blackbody calibration verifier opening, comparing readings to the CM.

8. **Accuracy Limits:** Comparison between CM and tested thermometer readings should be within ±0.4°F (0.2°C) for acceptable field limits. If not, repeat the process. In the event they still differ by more than the acceptable limits, call Exergen Corporation for replacement of the failed instrument.

9. **Heat Balance Awareness**: TAT-5000 and TAT-5000S models employ the patented arterial heat balance method to adjust to their surrounding ambient temperature for precise, absolute accuracy. If left sitting on the heat well, they will assume the warmer temperature of the well, and thus will be at a different ambient than the instrument being tested (assuming it is at room temperature), and this could make a difference in the comparison.

10. **Reminder**: Comparisons between the CM and the instrument being tested should always be conducted under the same conditions.

Verifier Specifications:

- **Power Source:** 9-volt battery, or 9-volt power supply with adapter blades for North American, European, United Kingdom, Australian and Chinese power outlets.
- **Battery Life**: approximately 1 hr.
- **Low Voltage Indicator**: red LED shuts off when battery voltage drops below ~5 volts.
- **Temperature**: body temperature range 97 - 104°F (36 - 40°C), may vary with battery voltage.
- **Cleaning**: wipe down with alcohol or cleaning solution, do not immerse.
- **Recertification:** Certification is for one year. Please call Exergen to arrange for recertification.

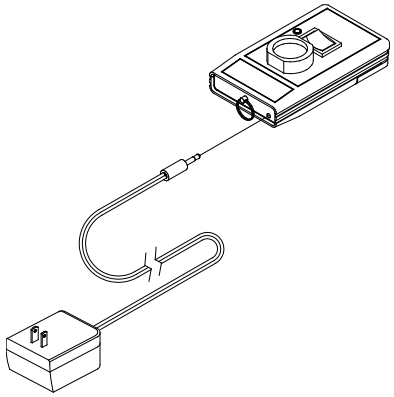


Figure 3. Power supply for PBB-1

If you have any questions about the calibration or operation of the Exergen Infrared Thermometers, please email medical@exergen.com, or call Exergen Medical Division.

EXERGEN
Straight From the Heart®

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